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EXAMINER

PAYNE, SHARON E

ART UNIT	PAPER NUMBER
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2875

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

A7A.

Office Action Summary

Application No.

10/047,521

Applicant(s)

WORSDELL ET AL.

Examiner

Sharon E. Payne

Art Unit

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-22 and 24-62 is/are pending in the application.
- 4a) Of the above claim(s) 32-46 and 48-62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-22,24-31 and 47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Claim Rejections - 35 USC § 112

1. Claims 1-5, 7-23, 24-31 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 31 and 47, these claims require that the predetermined angular distribution satisfy requirements specified by aviation lighting regulations. These claims must be rejected because aviation lighting regulations change with time, and the metes and bounds of the claim would change with time if the claims were allowed. The metes and bounds of a claim must be fixed over time.

Claims 2-5, 7-23 and 24-30 are necessarily included due to their dependency.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 31 is rejected under 35 U.S.C. 102(b) as being anticipated by Serizawa et al. (U.S. Patent 4,733,335).

Regarding claim 31, Serizawa et al. discloses an optical structure (rear lens member, reference number 206) adapted to collect the light emitted from the LEDs (Fig. 4) and propagate fractions of the collected light in accordance with a predetermined angular distribution (Fig. 4). The portion of the claim starting with “to satisfy” and ending at the end of the claim constitutes functional language that is not given patentable weight. See M.P.E.P. 2114.

4. Claim 47 is rejected under 35 U.S.C. 102(b) as being anticipated by Roney et al. (U.S. Patent 5,528,474).

Regarding claim 47, Roney et al. discloses an array of LEDs (Fig. 2) an optical unit (reference number 32) having an optical structure adapted to collect light emitted from the LEDs and propagate fractions of the collected light in accordance with a predetermined angular distribution (Fig. 2) and spacing means for holding the optical unit at a fixed distance from the LEDs (Fig. 2, legs coming down from lens). The portion of the claim starting with "to satisfy" and ending at the word "regulations" constitutes functional language that is not given patentable weight. See M.P.E.P. 2114.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 4-5, 7-8, 10, 12, 16, 24, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al. in view of Balch (U.S. Patent 1,320,308).

Regarding claim 1, Serizawa et al. discloses a housing (Fig. 4), a transparent window (front lens member, 205) protecting an opening in the housing (Fig. 4), a light source comprising an array of LEDs (reference number 209) disposed in the housing (Fig. 4), and an optical unit (rear lens member, reference number 206) also disposed in the housing behind the window and in front of the array of LEDs (Fig. 4), the optical unit being adapted to collect the light emitted

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from the LEDs and propagate fractions of the collected light in accordance with a predetermined angular distribution (Fig. 4). The portion of the claim starting with "such that" and continuing until the end of the claim constitutes functional language expressing a desired result that is not supported by structure and is not given patentable weight. See M.P.E.P. 2114. Serizawa does not disclose a housing adapted to be mounted on the exterior of the aircraft.

Balch discloses a housing adapted to be mounted on the exterior of the aircraft (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the housing of Balch with the lighting arrangement of Serizawa et al. to attach the lighting arrangement to the exterior of the aircraft.

Regarding claim 4, Serizawa et al. discloses the optical unit being positioned with respect to the LED array such that substantially all of the light emitted from the LEDs is incident upon the optical unit (Fig. 4).

Concerning claim 5, Serizawa et al. discloses the optical unit employing refractive optics (Fig. 4).

Regarding claim 7, Serizawa et al. discloses the first optical structure comprising a plurality of lenses adapted to collect light from the LEDs incident upon the optical unit (Fig. 2).

Concerning claim 8, Serizawa et al. discloses each of the LEDs being associated with a respective one of the plurality of lenses (Fig. 2).

Regarding claim 10, Serizawa et al. discloses each lens of the plurality of lenses positioned immediately in front of the LED with which the lens is associated (Fig. 2).

Concerning claim 12, Serizawa et al. discloses each lens of the plurality of lenses being spherical (column 6, last line).

Regarding claim 16, Serizawa et al. discloses a second optical structure (reference number 126) adapted to transmit the collected light from the optical unit (Fig. 2).

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Regarding claim 24, Serizawa et al. discloses the optical unit as a molded, plastic element (column 4, lines 44-45).

Regarding claim 28, Serizawa et al. does not specifically disclose providing a gap between the LEDs and the optical unit of up to 5 mm.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the spacing between the optical unit and the LEDs in the Meggs et al. reference to catch as much light in the optical element as possible.

Regarding claim 29, Serizawa et al. does not specifically disclose providing a gap between the LEDs and the optical unit that is between 0.3 mm and 2mm.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the spacing between the optical unit and the LEDs in the Meggs et al. reference to catch as much light in the optical element as possible.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al. in view of Balch as applied to claim 1 and further in view of Meggs et al. (U.S. Patent 4,521,835).

Concerning claim 2, Serizawa et al. does not disclose the type of optical unit disclosed in the claim. Meggs et al. discloses an optical unit adapted to redirect, in a substantially forward direction relative to the orientation of an aircraft to which the warning light is affixed (column 4, lines 1-10), at least some of the light which otherwise would be emitted from the LEDs in a substantially lateral direction relative to the orientation of the aircraft (column 4, lines 10-20). The portion of the claim starting with "wherein" in line 2 and ending with "navigation warning light" in line 3 constitutes use language, which is not given patentable weight. See M.P.E.P.

2112. (A navigation warning light is merely another use for a light; the structure is still that of a light.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the optical unit of Serizawa et al. with the optical unit of Meggs et al. to redirect the light toward the front of the aircraft.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al. in view of Balch as applied to claim 1 above, and further in view of Bodem (U.S. Patent 5,388,035).

Regarding claim 3, Serizawa et al. does not disclose an optical unit that is adapted to redirect light in a substantially horizontal direction from a vertical direction. Bodem discloses an optical unit that is adapted to redirect, in a substantially horizontal direction relative to the orientation of an aircraft to which the warning light is affixed, at least some of the light which otherwise would be emitted from the LEDs in a substantially vertical direction relative to the orientation of the aircraft (abstract).

The portion of the claim starting with "wherein" in line 1 and ending with "anti-collision light" in line 2 constitutes use language, which is not given patentable weight. See M.P.E.P.

2112. (An anti-collision light is merely another use for a light; the structure is still that of a light.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the optical unit of Bodem in the apparatus of Serizawa et al. for spreading the light horizontally.

9. Claims 1, 7, 9, 11 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roney et al. (U.S. Patent 5,528,474) in view of Balch.

Regarding claim 1, Roney et al. discloses a housing (Fig. 1), a transparent window (lens, reference number 16) protecting an opening in the housing (Fig. 1), a light source comprising an array of LEDs (reference number 12) disposed in the housing (Fig. 1), and an optical unit (rear of lens facing LEDs, reference number 32) also disposed in the housing behind the window and in front of the array of LEDs (Fig. 2), the optical unit being adapted to collect the light emitted from the LEDs and propagate fractions of the collected light in accordance with a predetermined angular distribution (Fig. 2). The portion of the claim starting with "such that" and continuing until the end of the claim constitutes functional language expressing a desired result that is not supported by structure and is not given patentable weight. See M.P.E.P. 2114. Roney et al. does not disclose a housing adapted to be mounted on the exterior of the aircraft.

Balch discloses a housing adapted to be mounted on the exterior of the aircraft (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the housing of Balch with the lighting arrangement of Roney et al. to attach the lighting arrangement to the exterior of the aircraft.

Regarding claim 7, Roney et al. discloses a first optical structure comprising a plurality of lenses adapted to collect light from the LEDs incident upon the optical unit (Fig. 2). Each lens rib of reference number 16 is considered to be a lens.

Concerning claim 9, Roney et al. discloses the array of LEDs comprising a plurality of rows of LEDs (Fig. 1) and each of the rows is associated with a respective one of the plurality of lenses (abstract).

Regarding claim 11, Roney et al. discloses each lens of the plurality of lenses being positioned immediately in front of the row of LEDs with which the lens is associated (Fig. 2).

Concerning claim 25, Roney et al. discloses a spacer adapted to position the optical unit at a selected distance from the LEDs (left and right ends of reference number 16, Fig. 2).

Regarding claim 26, Roney et al. discloses a spacer formed integrally with the optical unit (Fig. 2, reference number 16, ends).

Concerning claim 27, Roney et al. discloses the LEDs being encapsulated in a potting compound (reference number 14) and the potting compound is formed at a predetermined depth to provide the spacer (Fig. 2). The potting compound and the ends of the lenses both function as spacers.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roney et al. and Balch as applied to claim 9 above, and further in view of DE 4128995 A1 (hereinafter "Decker").

Regarding claim 13, Roney et al. does not disclose aspherical lenses. Decker discloses the plurality of lenses being aspherical. (See the Derwent abstract.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the aspherical lenses of Decker in the apparatus of Roney et al. to distribute the light as desired.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al. and Balch as applied to claim 12 above, and further in view of GB 2,295,274 A (hereinafter "Bernard").

Regarding claim 14, Serizawa does not disclose total internal reflection structures. Bernard discloses an optical unit comprising total internal reflection structures (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the total internal reflection structures of Bernard in the apparatus of Serizawa et al. for distributing the light as desired.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roney et al in view of Balch and Decker as applied to claim 13 above, and further in view of Bernard.

Regarding claim 15, Roney et al. does not disclose total internal reflection structures. Bernard discloses an optical unit comprising total internal reflection structures (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the total internal reflection structures of Bernard in the apparatus of Roney et al. for distributing the light as desired.

13. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al. in view of Balch as applied to claim 16 above, and further in view of Kondo et al. (U.S. Patent 6,296,376 B1).

Regarding claim 17, Serizawa does not disclose a second optical structure with one or more prisms. Kondo et al. discloses a second optical structure comprising one or more prisms adapted to propagate the collected light in accordance with the predetermined angular distribution (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the optical structure of Kondo et al. in the apparatus of Serizawa for distributing light as desired.

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Regarding claim 18, Serizawa does not disclose a plurality of prisms. Kondo et al. discloses a plurality of prisms extending along one or both of the length and width of the LED array to form a series of ridges on an outer surface of the optical unit (Fig. 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the prisms of Kondo et al. in the apparatus of Serizawa et al. to distribute the light as desired.

14. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al. in view of Balch and Meggs as applied to claim 2 above, and further in view of Albou (U.S. Patent 6,273,591).

Regarding claim 21, Serizawa et al. does not disclose an optical unit with convex lenses on one face and prisms on another. Albou discloses an optical unit comprising a transparent body having a first face provided with a first optical structure (Fig. 1) and a second face provided with a second optical structure (cells, reference character C), the second face being opposed to the first face (Fig. 1), the first optical structure being in the form of a plurality of convex lenses (Fig. 1) and the second optical structure being in the form of one or more prisms (Fig. 1), and the convex lenses being positioned with respect to the one or more prisms such that light from the optical unit is propagated in accordance with the predetermined angular distribution (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the optical unit in Serizawa et al. with the optical unit in Albou to distribute light as desired.

15. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al. in view of Balch and Bodem as applied to claim 3 above, and further in view of Futami et al. (U.S. Patent 6,386,743).

Regarding claim 22, Serizawa et al. discloses an optical unit comprising a transparent body having first and second opposed faces (Fig. 4). Serizawa et al. does not disclose aspherical cylindrical lenses. Futami et al. discloses an optical unit comprising a transparent body having first and second opposed faces (Fig. 13), the first face being provided with a plurality of aspherical cylindrical lenses (Fig. 1, column 9 in line 63 to column 10 in line 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the optical unit of Serizawa et al. with the optical unit of Futami et al. to distribute the light as desired.

16. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al. in view of Balch as applied to claim 1 above, and further in view of Bauer et al. (U.S. Patent 6,550,949 B1).

Regarding claim 30, Serizawa et al. does not disclose an IR LED. Bauer et al. discloses an IR LED (column 10, lines 10-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the IR LED of Bauer in the apparatus of Serizawa et al. to send optical identification patterns.

Allowable Subject Matter

17. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter.
The prior art fails to disclose the following features:

- 1) a warning light with the strings of LEDs and prisms positioned orthogonally with respect to each other; and
- 2) a warning light with a plurality of strings of LEDs connected in parallel with other strings with the prisms positioned to extend across the LEDs of a plurality of the strings.

Response to Arguments

18. Applicant argues that Roney et al. does not have a separate optical unit, making claim 1 patentable over Roney et al. To the contrary, claim 1 does not require that the optical unit be separate; therefore, part of a lens may be designated as the optical unit.

Applicant argues that a person of ordinary skill in the art of exterior aircraft lighting would not examine solutions produced for vehicle lighting. To the contrary, both vehicle and aircraft lighting must meet federal specifications for light output and are connected to the outside of a vehicle. A person of ordinary skill in the art in aircraft lighting would look at vehicle lighting because of the similarities in needs.

The other arguments are rendered moot due to new grounds of rejection.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

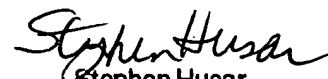
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon E. Payne whose telephone number is (703) 308-2125. The examiner can normally be reached on regular business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703) 305-4939. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

sep


Stephen Husar
Primary Examiner